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# Co-evolution in practice: The wolf's disruptive return to the Netherlands

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**Abstract**: Dutchmen like to pride themselves on having 'successfully conquered nature' through engineering, management and design. Currently, however, this triumphant spirit has been dampened by global, regional, and local developments that expose established Dutch notions of malleability and control as fallacies. This paper uses the unsolicited return of wolves to the Netherlands as an explanatory case study to illustrate how in this unfolding controversy problem and solution spaces co-evolve and thus call for all-but-reductionist design and management approaches. Building on the crucial difference between problems (that can be solved) and issues (that can be stabilised), a model is proposed that explicates how problem and solution spaces can nest inside an overarching issue space. After analysing how Dutch citizens and officials respond to uncalled-for circumstances caused by the wolf's uninvited homecoming, this model is used to argue for co-evolutionary thinking and acting to support harmonious more-than-human cohabitation in the Netherlands and beyond.

**Keywords**: human-nonhuman co-evolution, paradigm shift

## 1. Introduction: The breakdown of reductionism

Dutchmen – whether they are historians, civil engineers or politicians – take pride in how their small country was significantly enlarged over a period of centuries by reclaiming below-sea-level territories and parts of the North Sea (see, e.g., Niemeijer, 2020). By rendering former wetlands and waterbodies habitable for Dutch landlubbers through engineering, management and design, quite a few of their descendants pride themselves on having successfully 'conquered nature.'

Currently, however, this triumphant spirit has been dampened by global, regional, and local developments that expose certain Dutch notions of malleableness and control as fallacies. On a global scale climate change is redefining the future consequences of living up to seven meters below sea-level (see, e.g., KNMI, 2009), while on regional and local levels a close inspection of Dutch nature management showcases reveals several cracks and leaks. A case in point are the controversies regarding the Dutch nature reserve *Oostvaardersplassen*.

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From 1968 onwards, after land had been reclaimed from the former *Zuiderzee*,[1] this natural territory emerged spontaneously on a waterlogged section of the newly created *Flevopolder* – a section that awaited its planned development into an industrial area. Due to the simple fact that the area *was mostly left untouched*, Oostvaardersplassen's ecosystem developed through biological self-organisation and became both a home base and hub for a variety of (migratory) birds and swamp animals (Wigbels, 1991). Over a period of decades, Oostvaardersplassen steadily evolved into a natural area of international significance that was officially added to the European Natura 2000 network[2] in 2010 (Staatsbosbeheer, 2019). The Dutch inclination to engineer, plan, design, intervene and control – which had ignited Oostvaardersplassen's emergence in the first place – made human-led interventions in this spontaneously developing natural area inevitable, especially when the territory's environmental potential was formally recognised by governing bodies. These purposeful 'nature management' interventions, as it turned out, were both for better and for worse.

In the decades following Oostvaardersplassen's unplanned emergence its territories were first (1) 'discovered' as an area of ecological importance, then (2) formalised into an official state-supported nature reserve, to be finally (3) partly disclosed to facilitate recreational and educational activities. In the 1970s, after Dutch authorities granted Oostvaardersplassen the official status of nature reserve, an embarkment was created to prevent the area's wetlands from drying out. Installing pumps and a sluice enabled the regulation of wetland water levels, which are of crucial importance to maintain favourable habitat conditions for swamp animals (Wigbels, 1991). Moreover, the state-initiated rerouting of a newly built railway around (instead of through) its territories further supported the area's flourishing and contributed to its public profile by making it very visible to commuters in passing trains (Staatsbosbeheer, n.d.; Theunissen, 2019).

In the mid-1990s Dutch officials decided to fundamentally adjust their proactive nature management approach and minimise interference with Oostvaardersplassen to allow greater leeway for 'nature to take its course' (Theunissen, 2019). Although this newly adopted *laissez-faire* nature management strategy seems to align with the territory's initial unplanned emergence, its implementation was caught up by a shadow of the past, as it exposed the vulnerabilities of a former reductionist intervention. The human-led introduction of large herbivores to the area during the 1980s and 90s had created an ecological imbalance that rendered the new hands-off approach to be headed for disaster. A state-led intervention, moreover, that is today considered a failed rewilding experiment by experts and citizens alike as it sparked a huge backlash (Barkham, 2018; Theunissen, 2019).

Due to Oostvaardersplassen's relatively small size of roughly 58 square kilometres and the absence of apex predators[3] to control the herbivore population size, an unchecked growth in the number of red deer, Konik horses and Heck cattle made the area's ecosystem increasingly unbalanced. Herbivore overpopulation caused certain plants and birds to disappear and eventually caused sizable numbers of horses and deer to die from starvation, especially during harsh winters (Theunissen, 2019). Herbivore casualties, moreover, that lay

[1] In 1932 a thirty-two kilometre long dam was finished that transformed this shallow North Sea inlet into the Netherlands' largest lake (Wigbels, 1991).

[2] Natura 2000 is a network of protected areas that aims to conserve "Europe's most valuable and threatened species and habitats … both on land and at sea" (European Environment Agency, 2023).

[3] Such as, for instance, wolves.

scattered in a "bleak and denuded landscape … [of] dead trees … [and] tightly grazed grass" that some experts described as "disproportionate" and several Dutch citizens considered "abusive" and "unnecessary" (Barkham, 2018). Qualifications that reflect how Dutch 'nature management' in Oostvaardersplassen had unintentionally manoeuvred itself into an untenable position, as the nature reserve's public profile and visibility had rendered its reductionist rewilding experiment a failure for all to see.

While forest rangers were instructed to let cadavers decompose *in situ*, the sight (e.g. from passing trains or bird observatories) of overgrazed meadows, gnawed-away tree stumps, starving Konik horses and ubiquitous red deer carcasses galvanised Dutch citizens into action. Public outcry over the area's starving fauna not only sparked protests and petitions but also triggered citizens to engage in self-initiated illegal activities such as supplementary feeding (Barkham, 2018). In a country famous for its water management and civil engineering, the need for *systemic* and *holistic* approaches to 'manage' Dutch nature[4] had become painfully clear, as the public-*un*friendly consequences of Oostvaardersplassen's failed reductionist interventions had been exposed in broad daylight. An insight, moreover, that would become even more urgent with the unsolicited return of wolves to the Netherlands.

To underline the importance of co-evolutionary thinking and acting, I will first propose a conceptual model that situates the co-evolution of problem and solution spaces inside an overarching issue space. I will then present the unsolicited return of the wolf (*Canis lupus*) to the Netherlands as an explanatory case study that illustrates how co-evolving problem and solution spaces call for all-but-reductionist design and management approaches.

## 2. Co-evolution: From butterflies to ill-defined problems

### *2.1 Co-evolution's journey from biology to design*

In biology, the term "coevolution" – coined by Paul Ehrlich and Peter Raven in a 1964 study that examined the symbiotic relationship between specific species of butterflies and plants – is used to describe how multiple species (in order to survive) simultaneously co-evolve in a physical environment or habitat, and during those processes can impact each other's fitness and evolutionary trajectories (Amandine et al., 2022; Ehrlich & Raven, 1964).

These "coevolutionary interactions" can underpin mutually beneficial, co-dependent relationships, but also parasitic ones (Amandine et al., 2022, p. 1003; Ehrlich & Raven, 1964). When taking place within (relatively) short timespans, coevolution is driven by ecological dynamics and does not include genomic transformations. When coevolution happens within (relatively) long timeframes, genomic transformations can become part of its dynamics. As such, in the words of Cornille Amandine et al. (2022, p. 1003) "the coevolution of two (or more) species is expected to vary across space and time, and depends on the cumulated effects of ecological and evolutionary processes acting within and among populations."

[4] To further a paradigm shift towards systemic design and management approaches (Kuhn, 1962), I agree with scholars like Latour (1993) and Escobar (2017) that many established binary oppositions such as the nature/culture divide are impossible to uphold, as well as fundamentally counterproductive.

The concept of coevolution (often spelled as co-evolution, which is the spelling I will also use) has been adopted and/or appropriated in other disciplines as well, such as computer science (e.g. Koza, 1992) and design (e.g. Dorst, 2019; Dorst & Cross, 2001; Maher et al., 1996). In the context of computer science, John Koza (1992) stays relatively close to its original implementation in biology when adopting this concept. Koza (1992) upholds the division between co-evolutionary dynamics driven by *ecological* and those driven by *genomic* transformations. In Koza's (1992, p. 1) argumentation "the […] "genetic programming paradigm" which genetically breeds populations of computer programs to solve problems" (genomic transformations) can also be implemented in a context where "each population acts as the environment for the other population" (ecological transformations) and therefore impacts each other's fitness for solving a given problem.

In design theory, the theoretical construct co-evolution has been appropriated in a looser way; describing processes mostly driven by ecological transformations. The term has been used to describe a critical phenomenon that is especially evident in design practices situated in contexts characterised by entanglements of *ill-defined* problems. In these pronouncedly complex contexts, the term co-evolution is used to explain that both "problem spaces" and "solution spaces" are not stable entities but rather *evolve in response to each other* (Maher et al., 1996) during a purposeful exploratory process that ends when a problem-solution pair is found that is deemed most fitting and satisfactory (Dorst & Cross, 2001). This co-evolutionary dynamic is driven by two mutually influencing activities that are crucial to the realm of design: framing and formgiving.

## *2.2 Problem and solution spaces*

In the literature, the concepts of "problem space" and "solution space" acknowledge that problems and solutions are not objective phenomena which just exist 'out there,' simply to be found or discovered, but instead are *subjective* entities that need to be actively constructed for them to 'exist' in the first place (see, e.g., Kolks, 2023). Moreover, these two concepts recognise that a specific problem and its potential solution are situated in constitutive contexts that (after being actively forged) can be deconstructed and reconstructed (see, e.g., Dorst & Cross, 2001). Finally, to describe them as "spaces" acknowledges that there are no single solutions to objectified and inert problems, but rather that problems and solutions are changeable phenomena that can co-evolve in multiple ways. Consider how in a design process the problem space can be construed as a constellation of concerns, objectives, constraints and specifications that are (currently) under consideration (Simon, 1973) and for which a solution is deemed necessary. The solution space, on the other hand, is a constellation of possible solutions in relation to these concerns, objectives, constraints and specifications.

In design specifically, problem and solution spaces can be (de- and re)constructed through the interplay between the activities of (re)framing and formgiving, where (simply put) reframing is understood as purposefully considering something from a different perspective (see, e.g., Schön & Rein, 1994) and formgiving as purposefully determining the manifestation, state or shape of something (see, e.g., Abidin et al., 2008; Kolks & Van Middelkoop, 2025). While reframing a problem space can create new possibilities for giving form to fitting solutions, the reverse is also true: creating potential solutions through formgiving can inform the reframing of a related problem space. However, whereas

(re)framing can be enacted through verbal communication alone, formgiving always entails the implementation of non-textual elements and non-verbal communication.

In case of a design brief, whether handed down or self-defined, the given problem and solution spaces might already be described *as a pair*. For instance, a brief might state that "the sight of cars negatively influences how visitors of Dutch nature reserves experience nature" and therefore might suggest "to design a cleverly disguised parking garage for those visitors who travel there by car" as a fitting solution.[5] A design brief, however, might also merely describe the problem space *without articulating a related solution space*, leaving the latter to the designer(s) to construct.

## *2.3 Problems versus issues*

Problems come into existence through the act of *problematisation* or – within practically oriented contexts such as design – through problem *setting*. Social theorist Donald A. Schön (1983, p. 40, italics in original) describes "problem setting" as "a process in which, interactively, we name the things to which we will attend and frame the context in which we will attend to them." In short, a situation must first be understood, acknowledged, framed, and treated *as* a problem, before it actually *becomes* one (see, also, Constanza-Chock, 2020). Similarly, sociologist Noortje Marres (2007, p. 768) argues that "before a problematic entanglement counts as a matter of public concern, it must be actively articulated." Like problems, issues are not self-evident facts which simply exist 'out there.' Instead, they need to be actively constructed through public engagement and articulation (Marres & Rogers, 2005; Kolks, 2024). Different from problems, however, issues are disputes that are *not* solvable by political or scientific means. Instead, they are sustained by a perpetual exchange of perspectives, perceptions and ideas. In short: *while problems might be solved or fixed, issues can merely be stabilised* (Marres, 2007). And depending on one's individual perspective the new (always temporary) state in which an issue stabilises is either for better or for worse.

A problem can be described as nested inside an issue. Therefore, solving a specific problem might cause the overarching issue to stabilise in a different (temporary) state. For instance, within the overarching issue of discrimination, implementing a policy that facilitates candidates to apply anonymously might decrease the amount of desk rejections for specific groups of applicants.[6] The new policy might 'solve' the *problem* of certain applicants not getting invited for a job interview, while the *issue* of discrimination at large is not being resolved. This dynamic is congruent with what has been specified before, namely that issues – by definition – cannot be solved or fixed but can only be de- and restabilised.

As such, problem and solution *spaces* can also be described as nested inside an overarching issue space. Figure 1 depicts three possible variations within the confines of this conceptual framework:

Both problem and (related) solution space have been (re)constructed, and a problem-solution pair was found which is considered fitting and satisfactory.

[5] Here I am paraphrasing a handed-down project brief from my own practice. After reframing the initial problem-solution pair (see Dorst, 2002) our clients were not amused, as at the end of the day they did not get the parking garage design they asked for.

[6] For example, based on the applicant's name, home address or gender (see, e.g., Adamovic & Leibbrandt, 2023).

Both problem and (related) solution space have been (re)constructed, but no problem-solution pair has (yet) been found which is considered fitting and satisfactory.

A problem space has been described, but its related solution space has not (yet) been constructed.

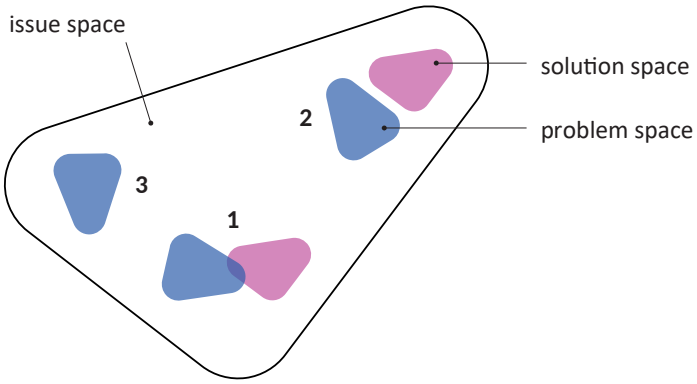


*Figure 1 Dynamic interrelated spaces model (DISM)*

Problem and solution spaces can nest inside an overarching issue space in different ways: 1. Problem and (related) solution space have been (re)constructed, a fitting problem-solution pair has been found; 2. Problem and (related) solution space have been (re)constructed, no fitting problem-solution pair has (yet) been found; 3. Problem space has been described, its related solution space has not (yet) been constructed. Source: author.

All three of the above-mentioned configuration types will affect, de- and restabilise the issue space and thus forge it into an altered state. The exact ways in which this happens, however, are difficult to assess due to the pronouncedly complex nature of this space and the ambiguity of its inner workings. As issues are disputes that are not solvable by political or scientific means (Marres, 2007), problem-solution pairs and spaces can never forge an issue space into a *permanent* shape or form. Moreover, the model presented in Figure 1 does not include the possibility of a sole solution space *of which the related problem space has yet to be constructed*, because this 'solution without a related problem' can also be described as a problem space. Consider, for example, that a new synthetic material was invented for which a useful application has yet to be found.[7] In the above model the potential of this newly invented material would not be designated a solution space that is still without a related problem space, but rather as a problem space that is still without a related solution space – for instance via the description "to make a profitable return on the investment costs that went into developing it, we need to find a useful application for this newly created material."

In conclusion, the dynamic interrelated spaces model (DISM) depicted in Figure 1 can be used by designers, researchers and administrators as both a conceptual tool and living reminder how solution-oriented design interventions (that respond to relatively well-defined problems) might relate to the (de- and re)stabilisation of an overarching issue (which is ill-defined). Hence, the model can be used to underline the value of co-evolutionary thinking and acting to support systemic and holistic design and management approaches. Approaches

[7] A case in point being Spencer Silver's invention of a lightly sticking adhesive with a "removability characteristic" that only found its application years later in the now ubiquitous sticky notes (Post-it, n.d.).

that do not consider problems isolated and/or inert phenomena but rather endorse their contextual complexity, changeability and interrelatedness (see, e.g., Escobar, 2017; Van der Bijl-Brouwer & Malcolm, 2020; Van der Leun et al., 2024).

### *2.4 Case study*

In what follows I will illustrate that co-evolutionary interactions between species that share the same habitat ask for design and management approaches which acknowledge that the contexts humans design *in*, *for*, and *with* (Ingold, 2011) are *unstable*, '*learning'* and thus *evolving*. I will use the unsolicited return of wolves to the Netherlands as an explanatory case study to illustrate how in this unfolding controversy problem and solution spaces co-evolve and therefore call for a paradigm shift concerning more-than-human cohabitation.

## 3. The wolf as a learning actor

### *3.1 Scepticism, prejudice and mystic codenames*

After roughly 140 years of absence, the return of wolves to the Netherlands was initially shrouded in clouds of scepticism, mystique and prejudice. On the fourth of July 2013, a (she-)wolf was found dead in the youngest Dutch province of Flevoland. A regional wildlife manager suggested that this wolf had probably been deposited there as a practical joke by "Eastern Europeans" that worked in the greenhouses near the location the lifeless animal was found (Zantingh, 2013). Not long after, this 'practical joke theory' was challenged by a Dutch biologist who had examined the corpse and who debunked the wildlife manager's line of reasoning why this she-wolf "could not possibly" have crossed the border from one of the Netherlands' neighbouring countries (Zantingh, 2013). However, as no one came forward that claimed to have (accidentally) killed this wolf on Dutch soil, definitive conclusions could not be drawn. Six years later, Dutch authorities found that another she-wolf (which they referred to with the technical code GW998f) had been living in nature reserve *De Veluwe* for at least six months. DNA derived from GW998f's prints and droppings showed that she formerly belonged to a pack from the German state of Brandenburg, several hundred kilometres to the east (NOS Nieuws, 2019). The scientific assessment that this she-wolf was not a wandering 'German tourist' but instead an actual 'Dutch resident' officially marked the return of wolves to the Netherlands (Bullock, 2019; NOS Nieuws, 2019).

### *3.2 EU legislation and its potential offspring*

As the species is endangered in Europe, the 1990s saw the European Union (EU) pushing for legislation to ensure basic protection for wolves. A political process that resulted in the European Habitats Directive and the Bern Convention which both sought to support a favourable conservation status for wolves (Jansman et al., 2021). From the 1990s onwards, as wolf populations grew, the species has increasingly spread across the European continent (Bullock, 2019). As growing wolf populations had already sparked controversies in France and Germany,[8] BBC journalist Anne-Marie Bullock posed an ominous statement concerning the wolf's return to the Netherlands as early as April 2019: "Whether the country can learn

[8] For instance: heated debates between farmers, conservationists and politicians.

from others and find a suitable balance [for humans and wolves to cohabit] will become apparent in the years to come." A.D. 2026, however, after decades of political turmoil characterised by a significant expansion of populist politics and a succession of unstable cabinets, the Netherlands' ability to learn from foreign wolf-related experiences still seems limited, to say the least.

## *3.3 Wolf-related controversies in the Netherlands*

Although its larger and longer-term ecological effects have still to be scientifically assessed, the return of wolves to the Netherlands marked the start of a new reality which affected a wide variety of human and non-human inhabitants in different ways. From Dutch (hobby) farmers and shepherds to walkers and amateur wildlife photographers, from sheep and dogs to wild boars and deer, the lives of all these actors were changed as a result.

While in different provinces Dutch farmers found that wolves had killed up to a few dozen of their sheep (see, e.g., Omrop Fryslân, 2025; Wijnsema, 2023), (amateur) photographers encircled a wolf in nature reserve *De Veluwe* in search of 'the perfect shot' (Omroep Gelderland, 2022). And while a train got delayed for accidentally hitting wolfs crossing the tracks (Gerritsen, 2025) and a wolf dragged a young boy into a forest (Heisen, 2025), action groups organised a protest march against the decision to shoot wolf GW3237m[9] which had caused the latter incident (RTL Nieuws, 2025). In short, while certain wolves do not shun humans, certain humans do not keep their distance from wolves either. As such, the return of wolves to the Netherlands marked a new reality that ignites strong emotional responses and even has a polarizing effect on Dutch citizens. A reality in which one seems to be either *for* or *against* the presence of wolves on Dutch soil. A binary opposition, moreover, that creates tensions *between* and *inside* communities.

While some Dutch citizens are excited about co-inhabiting their country together with wolves, others state that the Netherlands is simply too small for housing this particular apex predator (see, e.g., Schreuder, 2025). Underpinning these diametrically opposed views, however, is a *shared nature-culture divide* (see, e.g., Escobar, 2017; Latour, 1993); a dualist ontology illustrated by a Council for Animal Affairs report that states: "In places where people do not live directly alongside wolves, the wolf is seen as a desirable enrichment of nature. This is because [Dutch] city dwellers primarily experience nature as something they can visit and enjoy" (Raad voor Dierenaangelegenheden, 2024, p. 16, my translation). Moreover, regardless whether Dutch citizens are 'for' or 'against' wolves in their home country, many feel they are being judged harshly for even expressing their opinion.

While livestock owners are financially compensated for losses caused by wolf attacks, several feel their *emotional* turmoil is not properly recognised by Dutch authorities and their technocratic responses. Simultaneously, livestock owners that are *positive* about having successfully taken precautionary measures against attacks feel unsupported and unappreciated by colleagues that have very different experiences (Raad voor Dierenaangelegenheden, 2024, p. 11). These wolf-related controversies polarised Dutch citizens to such an extent that during the 2023 provincial elections a voting support website

[9] What's in a name? Authorities use the technical code-name "GW3237m" when referring to this wolf, while in common parlance he is known by the Dutch male name "Bram." To me, these differences in language usage signify a public relations struggle over this predator's public image (see, e.g., Van der Plicht, 2025).

posed the question whether wolves should be provided living space in the Netherlands as one of the determining factors for its users to decide which party to vote for (NOS Nieuws, 2023).

### *3.4 Wolves and their docility*

Although the Dutch had lived without wolves for well over a century, they were designated a protective *native* species in the Netherlands on June 30, 2014 (IPO, 2019). Anticipating that Dutch authorities might struggle with the new and uncalled-for circumstances the wolf's 'homecoming' could bring about, the first edition of an inter-provincial wolf plan was presented in 2019.[10] This report recognised the predator's mythical status, its 'natural tendency' to create media attention and ignite controversy, as well as the fact that current Dutch societies were no longer set to the presence of wolves (IPO, 2019). Neatly following the nature-culture divide paradigm, it describes the wolf's return to the Netherlands as "a *natural* process" (IPO, 2019, p. 9, my emphasis), as opposed to rewilding interventions such as those in Oostvaardersplassen described earlier in this paper. Interestingly, the report acknowledges the wolf's return as a *learning process* that might render *known situations into less predictable ones;* a process in which "experience also teaches us that we continue to learn new things and encounter unforeseen situations time and time again" (IPO, 2019, p. 2, my translation).

Although 2019's inter-provincial wolf plan recognises the predator's 'homecoming' as a learning process for *humans*, it does not simultaneously acknowledge *wolves* as learning beings that act, reflect, and make decisions within these very same developing circumstances. Moreover, the report upholds a conceptually unclear, essentialist divide between what is considered "natural" or "normal" wolf behaviour, and what is described as "learned behaviour" or "acclimatisation" (IPO, 2019, p. 14-16, my translation). Apparently, to the report's authors, adapting to the ever-changing conditions of their habitats should not necessarily be regarded "natural" or "normal" wolf behaviour. Therefore, the wolf's return to the Netherlands makes for an interesting case to illustrate the necessity of co-evolutionary thinking and acting by using the dynamic interrelated spaces model (DISM) as a conceptual framework to describe the changeable relations between co-evolving problem, solution and issue spaces.

## 4. The issue of more-than-human cohabitation

### *4.1 'Kill switches' and the nature-culture divide*

If we consider harmonious more-than-human cohabitation in the Netherlands our overarching issue space – a condition that cannot be solved, but instead can stabilise in different states – many of the controversies described above can be considered as problem and solutions spaces that nest inside it. Moreover, to keep things conceptually clear we must get rid of the nature-culture divide paradigm and replace it with a co-evolutionary perspective. Just as the so-called "natural" process of wolves spreading across Europe is

[10] This inter-provincial wolf plan was the result of a process that started in 2011 when Dutch government officials asked scientists to explore the possible consequences of wolves returning to the Netherlands (IPO, 2019).

partly underpinned by protective EU legislation (the work of humans), so are the behaviours of certain humans (whether they are farmers, amateur photographers or dog-lovers that like to walk their pet in nature reserves) profoundly changed by the "acclimatisation" of wolves. The notion that *Dutch humans and wolves co-evolve within an issue space of learning to live together*, however, has not fully sunken in – which is illustrated by the latest edition of the inter-provincial wolf plan.

Building upon arbitrary and ambiguous distinctions between what is considered "natural," "normal" or "learned" wolf behaviour (IPO, 2019), an "escalation ladder" was added to the wolf plan (IPO, 2023) that describes three possible qualifications: "no problem situation," "problem situation" and "problem wolf" (Vereniging Interprovinciaal Overleg, 2025). In this directive a "problem situation" is defined as a situation in which a wolf "does not act *abnormal*, but does cause *conflict situations* to emerge" (Vereniging Interprovinciaal Overleg, 2025, p. 65, my translation and emphasis). The directive further differentiates a "problem wolf" from a "problem situation" by stating that "a problem wolf exhibits problematic behaviour that is not necessarily *unnatural*, but is nevertheless *abnormal* and *undesirable*. Types of behaviour that are most likely *learned by the wolf in response to human circumstances* (Vereniging Interprovinciaal Overleg, 2025, p. 65, my translation and emphasis). So, whereas the first two escalation ladder qualifications address "situations," the third qualification (which is deemed most alarming) *individualises* the second situation category and relates it to a single actor, based on unclear differentiations between what is considered "unnatural" and what is deemed "abnormal." Again, the wolf as a *learning actor* is not officially being recognised as a 'natural being.'

In general, differences between what is considered "natural," "normal" and "desirable" behaviours are underspecified, to say the least. Hence, it may well be that the neologism "problem wolf" was coined to forge legal pathways that could circumvent EU protective regulations[11] in order to implement 'quick fixes' for so-called "problematic," "abnormal" and even "non-wolf-like" behaviour[12] by certain individual members of the Dutch wolf population that are essentially considered *undesirable* by some of their human fellow countrymen (Hus, 2024; Vereniging Interprovinciaal Overleg, 2025). Following the escalation ladder directive, the issue space of Dutch humans and wolves learning to live together harmoniously is now *officially* an uneven playing field. If we consider "undesirable" wolf behaviour as a problem space, the directive allows Dutch humans to settle on a 'quick fix' within the related solution space and 'flip the kill switch' by designating the enacting animal a "problem wolf" (and subsequently ask for legal permission to have it shot).[13] However, the longer-term structural impact of this short-circuited problem-solution pair on the overarching issue of harmonious more-than-human cohabitation in the Netherlands is questionable, to say the least.

[11] The Bern Convention (formally the Convention on the Conservation of European Wildlife and Natural Habitats) designated the wolf as a "strictly protected fauna species." However, as of March 2025 the wolf's protected status has been officially lowered to "protected fauna species" (Council of Europe, 2025).

[12] To me, this reeks of discursive trickery informed by an essentialist mindset. How a wolf can exhibit "non-wolf-like behaviour" seems to defy logic. It reminds me of musician Neil Young being sued by his then record company for not sounding enough like himself – in short, for making 'non-Neil-Young-like' music (see, e.g., Lewis, 2011).

[13] A permit issued by Dutch provincial authorities to shoot a specific wolf can still be challenged in court. In some cases, judges prohibited the shooting of "problem wolves" (e.g. NOS Nieuws, 2025, October 2) – and (in my words) 'asked authorities to revisit the solution space' – while in other cases shootings have been granted.

### *4.2 Reductionist logic falls apart*

By reducing problems nested inside the overarching issue space of human-wolf cohabitation to ambiguous "escalation ladder qualifications," the co-evolutionary dynamics of problem and solutions spaces appears to be willingly ignored. A telling example is a Dutch wolf that learned to jump over a so-called "wolf-proof fence" one time too many and was therefore declared a "problem wolf" (NOS Nieuws, 2025, August 28). Although this particular fence was built to official 'wolf-proof' specifications, a wolf managed to jump over it several times and subsequently killed around sixty sheep.[14] And while the interprovincial wolf plan features ambiguous and arbitrary qualitative descriptions on wolf behaviour, its directives based on *quantitative* behavioural data are crystal clear (although their reasoning is equally ambiguous). In the 2025 wolf plan the "intervention guideline for wolf-human situations" states that if a wolf within "a period of at least two weeks … at least twice … attacks livestock protected by a *properly functioning* fence that meets the technical requirements of the advisory standard" it is officially considered a "problem wolf" (Vereniging Interprovinciaal Overleg, 2025, p. 78, my translation and emphasis). Besides the fact that this jumped-over fence which met "the technical requirements of the advisory standard" was obviously not "properly functioning," wolf behaviour is treated here as something that can be fixed and quantified instead of recognizing *the co-evolutionary dynamics between two species of learning beings that respond to each other's behaviours*.

Instead of acknowledging that the design of this "wolf-proof fence" is no longer a fitting solution for protecting livestock against wolf attacks – and thus recognising that both problem and solution space need to be revisited – the co-evolution of problem and solution has been short-circuited without affecting the overarching issue in constructive ways. By ignoring the co-evolutionary dynamics between human and wolf behaviour, a short-term problem-solution pair based on rigid and arbitrary decision criteria is being prioritised over a systemic and holistic approach that continuously assesses, reconsiders, and reframes currently constructed problem and solution spaces. A co-evolutionary approach, moreover, that seeks to constructively contribute to long-term harmonious more-than-human cohabitation in the Netherlands and beyond.

## 5. Conclusion and discussion

In this paper I have used the wolf's return to the Netherlands as an explanatory case study to illustrate how problem and solution spaces co-evolve within an overarching issue space and therefore need to be addressed through systemic and holistic (rather than reductionist) design and management approaches. While problems might be solved or fixed, issues can merely be stabilised (Marres, 2007). I have shown how in the Netherlands the broadly adapted nature-culture divide paradigm obstructs the view that Dutch humans and wolves *evolve in response to each other within an issue space of learning to live together harmoniously*. Instead of acknowledging wolves to be *learning actors* that (like humans) act, reflect, and make decisions in response to ever-changing circumstances, current Dutch 'wolf management policies' seem to seek *fixed* solutions regarding an inherently *dynamic* problem space. To do so, argumentation is twisted at will and neologisms are created. Building on this

[14] Although not wolf-proof, this fence was sheep-proof – unfortunately for these animals.

case study, I have argued that rigid and reductionist design and management approaches – which treat problem and solution spaces as stable entities – can fail to structurally affect overarching issue spaces in meaningful ways, especially in complex and ill-defined contexts.

Encouragingly, however, a recent field research project simultaneously monitors wolves, their prey, *and* leisure-seeking humans (who all 'use' the same Dutch nature reserve, but for different reasons) to study how these actors affect each other's behaviours (see, e.g., Schreuder, 2025). To further support such co-evolutionary thinking and acting through research, design and management I have proposed a dynamic interrelated spaces model (DISM). This conceptual tool explicates three distinct ways in which problem and solution spaces – after being actively constructed in the first place – can relate to each other, and how they nest inside an overarching issue space. The exact ways in which these configurations affect, de- and restabilise the overarching issue space are difficult to assess due its complex nature and the ambiguity of its inner workings. However, both the DISM framework and the cases I have put forward aim to serve as a living reminder for those engaging in research, design and administration to practice co-evolutionary thinking and acting and thus continually consider if a seemingly fitting problem-solution pair might positively affect an overarching issue in structural ways.

They illustrate, moreover, how co-evolutionary interactions between species that share the same habitat ask for design and management approaches which acknowledge that the contexts humans design *in*, *for*, and *with* (Ingold, 2011) are unstable, 'learning' and thus evolving. The wolf's unsolicited return to the Netherlands serves as a key example of such an inherently complex, ill-defined and dynamic context where known situations easily change into less predictable ones. A key example, moreover, that underlines the need for *modus operandi* which inherently seek to learn, reconsider, reframe and reshape in order to anticipate ever-changing, unforeseen and potentially uncalled-for circumstances.

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